

ABSTRACT

An electrical conductor and a gas-filled layer are located at or near the surface of an object being deiced. The conductor carries an AC voltage that generates an alternating electric field in the gas-filled layer. A conductive layer increases the electric field strength in the gas-filled layer 5 between the electrical conductor and the conductive layer. The alternating electric field causes electric breakdown of gas and plasma-formation in the gas-filled layer. The plasma absorbs energy released during electric discharge through the plasma, which heats ice, causing it to melt. The alternating electric field typically has a field strength in a range of about from 1 to 100 kV/cm. The AC voltage typically has an amplitude in a range of about from 10 kV to 1300 kV, 10 and a frequency in a range of about from 50 Hz to 1 MHz. The gas-filled layer includes a plasma-forming gas selected from, among others, air, nitrogen and argon.